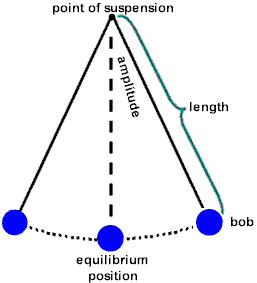
**A period (T) is the time it takes, in seconds, for an object to complete one cycle of oscillation.**

**The unit of a period is seconds (s).**



**Main Idea #1:**

The period of a pendulum is related to the length of the pendulum and acceleration due to gravity.

The formula is: Tpendulum =

l= length (m)

g= gravity (always 9.8m/s2)

As you increase the length of a pendulum the period will be longer.

**Example #1:**

You are swinging on a swing and find out that it takes you 3.5s to complete one cycle of oscillation. How long is your swing?

Given:

g=9.8m/s2

Tpendulum=3.5s

Find:

Length of swing

Equation:

3.5=

3.5 = Divide by 2pi

.557 = Square both sides

.314 = Multiply by 9.8 on both sides

3.07 = x

When solving for l, g, m or k make sure, when you divide by 2pi, put in in parenthesis in your calculator.

**Main Idea #2**

The period of a spring is related to the mass attached to the spring and the stiffness of the spring.

The formula is: Tspring =

m=mass attached (kg)

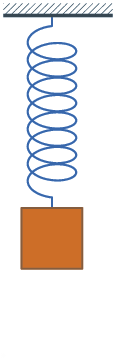
k=spring constant (N/m)

As the mass attached to the spring gets heavier the longer it will take the spring to complete one cycle of oscillation.

As the stiffness of the spring becomes greater, the period of the spring is shorter.

**Example #2**

You are playing with your slinky that has a spring constant of 1000N/m. You want to know how long it will take for your slinky to bounce down then back up to its original starting point. You attach a doll that weighs about 3kg. How long does it take for your slinky to return to its starting point?



Given:

m=3kg

k= 1000N/m

Find:

Tspring

Equation:

Tspring =

Since the spring constant is large and the mass is smaller it makes sense that the period of the spring is less than a second.

=

=

= .344 seconds

**Additional Resources**

Pendulums

<http://hyperphysics.phy-astr.gsu.edu/hbase/pend.html> <http://www.physicsclassroom.com/Class/waves/u10l0c.cfm>

Springs

<http://phoenix.phys.clemson.edu/labs/124/shm/index.html>

<http://www.physicsclassroom.com/Class/waves/u10l0d.cfm>